

DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 69.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-010401**Date Inspected:** 19-Nov-2009**Project Name:** SAS Superstructure**OSM Arrival Time:** 700**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1900**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**CWI Name:** Chen Xi**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** Orthotropic Box Girder (OBG) Crossbeams**Summary of Items Observed:**

On this day CALTRANS Office of Structural Materials (OSM) Quality Assurance Inspector (QA) Steve Hall was present during the times noted above for observations relative to the fabrication of the Self Anchored Suspension (SAS) Superstructure being performed by Zhenhua Port Machinery Company (ZPMC) at Changxing Island, in Shanghai, China. QA observed and/or found the following:

OBG CROSS BEAM CB1

This crossbeam has been brought back to the dock in order to allow American Bridge / Fluor (ABF) and Caltrans QA inspectors to perform Ultrasonic Testing (UT) on the Complete Joint Penetration (CJP) corner joints using the "D" scanning pattern described in AWS D1.5 figure 6.7. The purpose for this particular testing method is to detect suspected transverse cracking of the CJP corner joints.

OBG CROSS BEAM CB2

This crossbeam has been brought back to the dock in order to allow American Bridge / Fluor (ABF) and Caltrans QA inspectors to perform Ultrasonic Testing (UT) on the Complete Joint Penetration (CJP) corner joints using the "D" scanning pattern described in AWS D1.5 figure 6.7. The purpose for this particular testing method is to detect suspected transverse cracking of the CJP corner joints.

OBG CROSS BEAM CB3

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This crossbeam has been brought back to the dock in order to allow American Bridge / Fluor (ABF) and Caltrans QA inspectors to perform Ultrasonic Testing (UT) on the Complete Joint Penetration (CJP) corner joints using the "D" scanning pattern described in AWS D1.5 figure 6.7. The purpose for this particular testing method is to detect suspected transverse cracking of the CJP corner joints.

OBG CROSS BEAM CB4

This QA observed that no significant work was being performed on this crossbeam during the time QA was present.

OBG CROSS BEAM CB5

This QA observed that this crossbeam is currently in trial assembly. This QA observed that no significant work was being performed on this crossbeam during the time QA was present.

OBG CROSS BEAM CB6

This QA observed that no significant work was being performed on this crossbeam during the time QA was present.

OBG CROSS BEAM CB7

This QA observed that no significant work was being performed on this crossbeam during the time QA was present.

OBG CROSS BEAM CB8

This QA observed ZPMC personnel are continuing to try to correct the out of square condition of this crossbeam using a combination of heat and hand operated winches (come-alongs). ZPMC has revised the Heat Straightening Record (HSR) to reflect the use of come-alongs.

OBG CROSS BEAM CB9

This QA observed that no significant work was being performed on this crossbeam during the time QA was present.

OBG CROSS BEAM CB10

This QA observed that no significant work was being performed on this crossbeam during the time QA was present.

OBG CROSS BEAM CB11

Quality Control (QC) inspector identified as Mr. Zheng Zhi Wei informed this QA that ZPMC intends to repair

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welds on this crossbeam on 11/20/09. The welds in question were previously mentioned in an incident report generated by this QA on 11/10/09. The incident report concerns a number of welds that were repaired in a vertical downward progression. The repair procedure QC presented to this QA did not appear to be approved by the Engineer. This QA noted that the incident report has not yet been dispositioned by Caltrans (CT) Structural Materials Representative (SMR).

This QA observed that no significant work was being performed on this crossbeam during the time QA was present.

OBG CROSS BEAM CB12

This QA observed ZPMC qualified welding personnel identified as 054459 perform Flux Core Arc Weld (FCAW) welding on weld joint identified as CB201G-034-056. ZPMC QC identified as Mr. Sun Yan Fei was present to monitor the welding process. The welding parameters as measured using QC's calibrated instruments appeared to be in general compliance with WPS-B-T-2233-Tc-U4c-F.

OBG CROSS BEAM CB13

This QA observed ZPMC qualified welding personnel identified as 022387 perform FCAW welding on weld joint identified as CB202G-039-014. ZPMC QC identified as Mr. Zhao Cheng Jian was present to monitor the welding process. The welding parameters as measured using QC's calibrated instruments appeared to be in general compliance with WPS-B-T-2233.

This QA observed ZPMC qualified welding personnel identified as 053486 perform FCAW welding on weld joint identified as CB202G-037-034. ZPMC QC identified as Mr. Zhao Cheng Jian was present to monitor the welding process. The welding parameters as measured using QC's calibrated instruments appeared to be in general compliance with WPS-B-T-2133.

OBG CROSS BEAM CB14

This QA observed ZPMC welding personnel Build Up With Weld (Buttering) one edge of the bottom panel stiffener pass through slots. The procedure being used does not indicate to perform Ultrasonic Testing of the repair area as specified in AWS D1.5 2002 section 3.7.7.1. The slots are located in the web plates of floor beam diaphragms identified as FB204 and FB205. Piece Mark (PCMK) numbers affected are X203D, X205E, X205D and X205F at all four diaphragm locations. Weld numbers affected are as follows: CB202G-041-055, 056, 057, 058, 061 and 062; CB202G-042-053~062; CB202G-043-053~058, 061 and 062; CB202G-044-053~062; CB202G-041-051 and 052; CB202G-042-051 and 052; CB202G-043-051 and 052; CB202G-044-051 and 052. American Welding Society (AWS) D1.5 2002 section 3.1.5 states, Welds shall be prohibited on the work except as follows:

- (i) Base-metal repair performed in conformance with AASHTO M160/M160M (ASTM A 6/A 6M), Specification for General Requirements for Rolled Steel Plates, Shapes, Sheet Piling, and Bars for Structural Use, Article 9, by the mill or fabricator
- (2) All welds detailed on approved shop drawings
- (3) Repair welds authorized by this code
- (4) Other welds approved by the Engineer

AWS D1.5 2002 section 3.7.4 states, Prior approval of the Engineer shall be obtained for repairs to base metal

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(other than those required by 3.2), repair of major or delayed cracks, repairs to ESW and EGW welds with internal defects, or for a revised design to compensate for deficiencies. AWS D1.5 2002 section 3.7.7.1 states, Base metal not subjected to dynamic tensile stress may be restored by welding, provided the Contractor prepares and follows a repair WPS. The repair weld soundness shall be verified by UT or RT as approved by the Engineer. See attached photos for details. This QA informed ZPMC QA identified as Mr. Zhang Wei and ABF QA Mr. Kelvin Cheung of this issue and that an incident report would be generated.

During in process inspection this QA observed a Complete Joint Penetration (CJP) weld that did not appear to comply with the weld profile requirements of AWS D1.5 2002. The weld joint designation is FB204-042-064. The attached photo is for the purpose of capturing the in process workmanship being performed on this crossbeam.

OBG CROSS BEAM CB15

This QA observed that ZPMC is fitting temporary diagonal bracing in this crossbeam. No other significant work was observed on this crossbeam during the time QA was present.

OBG CROSS BEAM CB16

This QA observed ZPMC qualified welding personnel identified as 215250 perform FCAW welding on weld joint identified as CB202G-052-159. ZPMC QC identified as Mr. Zheng Zhi Wei was present to monitor the welding process. The welding parameters as measured using QC's calibrated instruments appeared to be in general compliance with WPS-B-T-2132-3.

This QA observed ZPMC qualified welding personnel identified as 217185 perform FCAW welding on weld joint identified as CB202G-052-160. ZPMC QC identified as Mr. Zheng Zhi Wei was present to monitor the welding process. The welding parameters as measured using QC's calibrated instruments appeared to be in general compliance with WPS-B-T-2132-3.

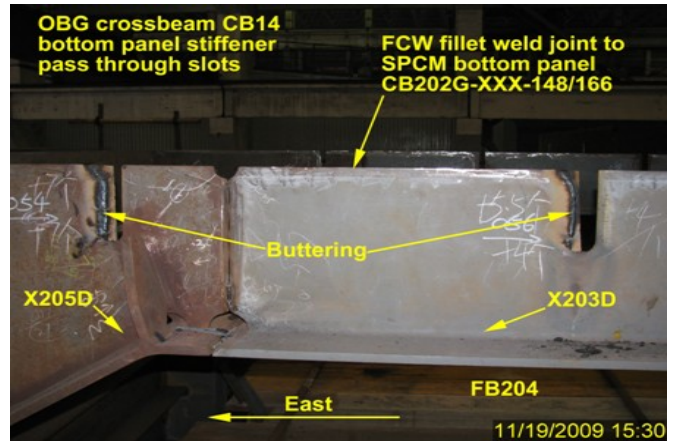
This QA observed ZPMC qualified welding personnel identified as 215185 perform FCAW welding on weld joint identified as CB202G-049-159. ZPMC QC identified as Mr. Zheng Zhi Wei was present to monitor the welding process. The welding parameters as measured using QC's calibrated instruments appeared to be in general compliance with WPS-B-T-2132-3.

This QA observed ZPMC qualified welding personnel identified as 204342 perform FCAW welding on weld joint identified as CB202G-049-160. ZPMC QC identified as Mr. Zheng Zhi Wei was present to monitor the welding process. The welding parameters as measured using QC's calibrated instruments appeared to be in general compliance with WPS-B-T-2132-3.

Unless otherwise noted, all work observed on this date appeared to be in general compliance with the applicable contract documents.

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Summary of Conversations:

As mentioned above.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Eric Tsang (15000422372), who represents the Office of Structural Materials for your project.

Inspected By:	Hall,Steven	Quality Assurance Inspector
Reviewed By:	Patterson,Rodney	QA Reviewer